DOCUMENT RESUME

ED 225 832 SE 040 191

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TITLE Teacher Questionnaire Data: Grades 3-5. Evaluation Report 6-C-1. Extended Pilot Trial of the Comprehensive School Mathematics Program.
INSTITUTION CEMREL, Inc., St. Louis, Mo.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Oct 79
NOTE 79p.; For related documents, see SE 040 181-196 and SE 040 340-348.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Educational Research; Elementary Education; *Elementary School Mathematics; *Elementary School Teachers; Mathematics Curriculum; Mathematics Instruction; *Program Evaluation; *Teacher Attitudes
IDENTIFIERS *Comprehensive School Mathematics Program; *Mathematics Education Research

ABSTRACT

The Comprehensive School Mathematics Program (CSMP) is a program of CEMREL, Inc., one of the national educational laboratories, and was funded by the National Institute of Education (NIE). Its major purpose is the development of curriculum materials for grades kindergarten through 6. In May 1979, a questionnaire was sent to 158 third-, fourth-, and fifth-grade CSMP teachers, and a number of the fourth- and fifth-grade teachers were also interviewed. The rate of return of the surveys was 51%. Roughly two-thirds occasionally repeated or extended lessons and half omitted some lessons. Many thought there were too many lessons dealing with probability and statistics. Almost all teachers supplemented the program in some way, ususally with computational practice. Roughly three-fourths said CSMP assumed certain entering prerequisites which students did not have, and even more indicated the curriculum did not adequately cover certain skills or concepts. CSMP was rated higher than previous mathematics programs in student interest and involvement, promotion of learning concepts, appropriateness for high ability pupils, and logical reasoning; but rated lower for computational skills development and appropriateness for low ability students. (MP)

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EXTENDED PILOT TRIALS OF THE COMPREHENSIVE SCHOOL MATHEMATICS PROGRAM:

EVALUATION REPORT SERIES

Evaluation Report 6-C-1
Teacher Questionnaire Data: Grades 3–5

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Extended Pilot Trial of the Comprehensive School Mathematics Program

Evaluation Report 6-C-1
Teacher Questionnaire Data: Grades 3-5

Ava Small
Martin Herbert

October, 1979

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Description of Evaluation Report Series

The Comprehensive School Mathematics Program (CSMP) is a program of CEMREL, Inc., one of the national educational laboratories, and is funded by the National Institute of Education. Its major purpose is the development of curriculum materials for grades K-6.

Beginning in September, 1973, CSMP began an extended pilot trial of its Elementary Program. The pilot trial is longitudinal in nature; students who began using CSMP materials in kindergarten or first grade in 1973-74, were able to use them in first and second grades respectively in 1974-75, and so on in subsequent years. Hence the adjective "extended".

The evaluation of the program in this extended pilot trial is intended to be reasonably comprehensive and to supply information desired by a wide variety of audiences. For that reason the reports in this series are reasonably non-technical and do not attempt to widely explore some of the related research issues. The list of reports from the first two years of the extended pilot trial is given on the next page. The most comprehensive of these are the following:

1-A-1: Overview, Design and Instrumentation
1-A-3: Final Summary Report, Year 1
2-A-1: Final Summary Report, Year 2
3-B-1: Summary of Second and Third Grade Test Data Year 3
4-A-1: Final Summary Report, Year 4
5-B-1: Fourth Grade MANS Test Data
and 6-A-1: Summary of Evaluation Data Through Fourth Grade

Longitudinal Pilot Study of the
Comprehensive School Mathematics Program

Evaluation Report Series

Evaluation Report 1-A-1	Overview, Design and Instrumentation
Evaluation Report 1-A-2	External Review of CSMP Materials
Evaluation Report 1-A-3	Final Summary Report Year 1
Evaluation Report 1-B-1	Mid-Year Test Data: CSMP First Grade Content
Evaluation Report 1-B-2	End-of-Year Test Data: CSMP First Grade Content
Evaluation Report 1-B-3	End-of-Year Test Data: Standard First Grade Content
Evaluation Report 1-B-4	End-of-Year Test Data: CSMP Kindergarten Content
Evaluation Report 1-B-5	Test Data on Some General Cognitive Skills Related to CSMP Content
Evaluation Report 1-B-6	Summary Test Data: Detroit Schools
Evaluation Report 1-C-1	Teacher Training Report
Evaluation Report 1-C-2	Observations of CSMP First Grade Classes
Evaluation Report 1-C-3	Mid-Year Data from Teacher Questionnaires
Evaluation Report 1-C-4	End-of-Year Data from Teacher Questionnaires
Evaluation Report 1-C-5	Interviews with CSMP Kindergarten Teachers
Evaluation Report 1-C-6	Analysis of Teacher Logs
Evaluation Report 2-A-1	Final Summary Report Year 2
Evaluation Report 2-B-1	Second Grade Test Data
Evaluation Report 2-B-2	Readministration of First Grade Test Items
Evaluation Report 2-B-3	Student Interviews
Evaluation Report 2-C-1	Teacher Questionnaire Data
Evaluation Report 2-C-2	Teacher Interviews, Second Grade
Evaluation Report 2-C-3	Teacher Interviews, First Grade
Evaluation Report 3-B-1	Second and Third Grade Test Data Year 3
Evaluation Report 3-C-1	Teacher Questionnaire Data Year 3
Evaluation Report 4-A-1	Final Summary Report Year 4
Evaluation Report 4-B-1	Standardized Test Data, Third Grade
Evaluation Report 4-B-2	Mathematics Applied to Novel Situations (MANS) Test Data
Evaluation Report 4-B-3	Individually Administered Problems, Third Grade
Evaluation Report 4-C-1	Teacher Questionnaire Data, Third Grade
Evaluation Report 5-B-1	Fourth Grade MANS Test Data
Evaluation Report 5-B-2	Individually Administered Problems, Fourth Grade
Evaluation Report 5-C-1	Teacher Questionnaire and Interview Data, Fourth Grade
Evaluation Report 6-A-1	Summary of Evaluation Data Through Fourth Grade
Evaluation Report 6-B-1	Comparative Test Data: Fourth Grade
Evaluation Report 6-B-2	Preliminary Test Data: Fifth Grade
Evaluation Report 6-C-1	Teacher Questionnaire Data: Grades 3-5

Key to Indexing

Evaluation Reports are labelled m-X-n,

where m is the year of the pilot study, with 1973-74 as Year 1.
X is the type of data being reported where A is for overviews and summaries, B is for student outcomes and C is for other data.
n is the number within a given year and type of data.

Teacher Questionnaire Data: Grades 3-5

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October, 1979

Introduction

In the fall of 1973, the Comprehensive School Mathematics Program (CSMP) began a longitudinal pilot study of its Elementary School Program. Over 100 teachers began using the program, eitner in first grade or kindergarten. In subsequent years, some of these classes continued with CSMP materials in the next grade levels, and many new classes began using CSMP materials. The 1978-79 school year constituted the second year of the Extended Pilot Trial of CSMP fourth grade materials and the first year of the Extended Pilot Trial of CSMP fifth grade materials.

In May, 1979, a questionnaire was sent to 158 third, fourth and fifth grade CSMP teachers, and a number of the fourth and fifth grade CSMP teachers who received a questionnaire were also interviewed. This report summarizes the teacher responses to these questionnaires and interviews.

Setting

In order to examine the questionnaire responses of CSMP teachers as a function of grade level, questionnaires were sent to all teachers of third, fourth and fifth grade CSMP. Altogether in 1978-79, there were 102 third grade, 58 fourth grade, and 30 fifth grade CSMP teachers. Sixteen of these fourth grade teachers and nine of these fifth grade teachers taught in the St. Louis region. For these teachers virtually the same set of questions was asked; some in questionnaire form, others in a fifteen-to-thirty minute interview conducted at the end of the school year.

Those teachers outside the St. Louis area were sent an eight page questionnaire consisting of those questions asked of the interviewed teachers. Thus all teachers responded to the same set of questions, though in the interview situations, teachers gave longer answers, and the interviewer was able to ask for clarification or amplification of any given response.

Table 1 shows the number of teachers who received a questionnaire and the rate of return (both in numbers and percentages). Fourth grade has two subdivisions: "veteran"classes (classes which had studied CSMP in previous years) and "entry" classes (classes new to CSMP). The veteran classes studied the regular fourth grade program, CSMP Mathematics for the Intermediate Grades, Parts 1 and 2, while the entry classes studied a special one-semester Entry Module, followed by Mathematics for the Intermediate Grades, Part I.

Table 1

Rate of Return for Questionnaires

	Number Sent	Number Returned	Percent Returned
Third Grade	102	43	42%
Fourth Grade (Veteran)	46	27	59%
Fourth Grade (Entry)	12	10	83%
Fifth Grade	30	17	57%
Total	190	97	51%

As can be seen, the overall rate of return was 51%, down from last year's 62%, mainly because of the low return rate from third grade teachers. One relatively large and successful CSMP site did not return any questionnaires. This lowered the rate of return of course; it may also have lowered the percent of favorable responses somewhat.

Responses to Questions

This chapter summarizes the responses to the questions. For each question, responses will be given for third grade, fourth grade and fifth grade CSMP teachers. This will be true regardless of whether a) the question was asked in an interview or questionnaire format and b) the teacher taught a veteran or an entry class. Where the responses of the latter two groups of teachers differed appreciably, this difference will be drawn to the reader's attention.

Questions dealt with seven main issues:

- teacher experience
- teaching style and attitude toward math
- teacher training
- implementation
- comparisons with other math programs
- evaluation of program
- low ability students

Each of these issues is covered in a separate section, at the end of which various comments are made, including a note of which questions elicited different responses according to grade level or class experience with CSMP. Below each question are the responses of third, fourth and fifth grade CSMP teachers respectively. The total number of responses to each question may vary because of teachers who left some questionnaire items blank. In general, there were approximately 42 respondents from third grade classes, 37 from fourth grade, and 17 from fifth grade. Where the numbers of respondents vary appreciably for a given question, it will be so noted in parentheses as (n=x).

Teacher Experience

Teaching Experience:

	3rd Grade	4th Grade	5th Grade
First year	7%	0	0
2-5 years	14%	19%	24%
6-10 years	36%	32%	12%
More than 10 years	43%	49%	64%

At what grade levels have you taught math?

3rd Grade	Just 3rd grade	23%
	3rd grade plus lower grades	16%
	3rd grade plus higher grades	21%
	3rd grade plus both lower and higher grades	40%
4th Grade	Just 4th grade	11%
	4th grade plus lower grades	24%
	4th grade plus higher grades	35%
	4th grade plus both lower and higher grades	30%
Fifth Grade	Just 5th grade	17%
	5th grade plus lower grades	18%
	5th grade plus higher grades	12%
	5th grade plus both lower and higher grades	53%

For how many years have you taught CSMP?

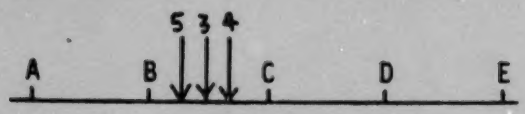
	3rd Grade	4th Grade	5th Grade
1 year	30%	43%	53%
2 years	40%	24%	41%
3 years	12%	22%	0
4 or more years	18%	11%	6%

At what grade levels (have you taught CSMP)?

	3rd Grade	4th Grade	5th Grade
Just this grade	72%	75%	82%
2 different grades	28%	25%	18%

Comments: It can be seen that most teachers had more than five years teaching experience at more than one grade level. With the exception of 5th grade teachers, over half were veteran CSMP teachers.

Best learning takes place when teacher leads class.



Best learning takes place when students work on their own.

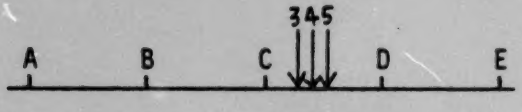
	A	B	C	D	E
3rd Grade	28%	21%	28%	15%	8%
4th Grade	11%	24%	54%	5%	5%
5th Grade	31%	19%	44%	6%	0%

Math class is one of my favorite times of the day.

Math class is one of my least favorite times of the day.

	A	B	C	D	E
3rd Grade	28%	31%	26%	5%	10%
4th Grade	38%	46%	11%	0	5%
5th Grade	35%	24%	35%	0	6%

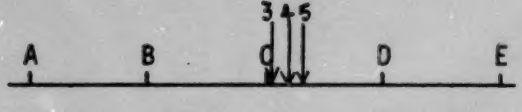
Math class has a business-like atmosphere.



Math class has a fun atmosphere.

	A	B	C	D	E
3rd Grade	5%	10%	48%	28%	10%
4th Grade	0	5%	60%	27%	8%
5th Grade	0	0	56%	38%	6%

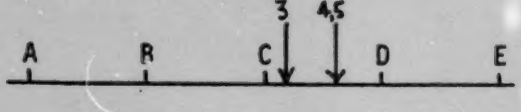
Oriented towards solving specific problems.



Oriented towards creative activities.

	A	B	C	D	E
3rd Grade	5%	26%	46%	15%	8%
4th Grade	0	16%	57%	16%	11%
5th Grade	0	0	81%	6%	13%

Math is one of the harder subjects to teach.



Math is one of the easier subjects to teach.

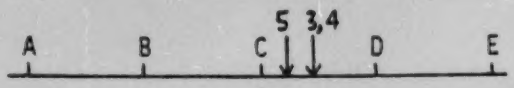
	A	B	C	D	E
3rd Grade	12%	17%	32%	20%	20%
4th Grade	5%	8%	41%	19%	27%
5th Grade	6%	19%	19%	25%	31%

Teaching Style and Teacher Attitudes

Below are given paris of statements. Please circle the letter which best describes, for your math class, the relative balance or emphasis, between the two.

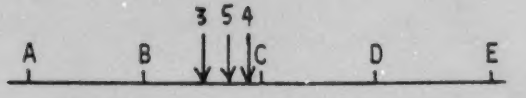
A mean score was derived for each grade by assigning a score of 1 to a response of A, . . ., 5 to E and then taking the average. These means are shown graphically by arrows (↓).

Achievement is oriented towards basic skills. — Achievement is oriented towards more general progress.



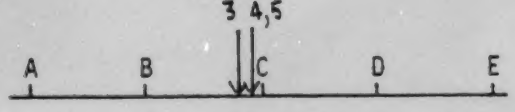
	A	B	C	D	E
3rd Grade	13%	10%	25%	25%	27%
4th Grade	0	19%	32%	41%	8%
5th Grade	0	19%	44%	31%	6%

My lesson plans are followed in great detail. — My lesson plans allow for frequent deviations.



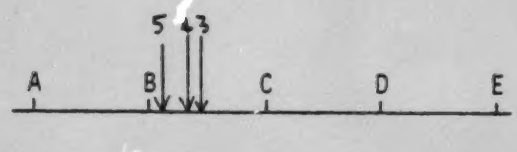
	A	B	C	D	E
3rd Grade	15%	35%	23%	15%	12%
4th Grade	11%	27%	32%	22%	8%
5th Grade	18%	18%	47%	12%	6%

Pace of lessons moves along smartly. — Pace of lessons is quite thorough.



	A	B	C	D	E
3rd Grade	11%	22%	44%	14%	8%
4th Grade	0	25%	61%	14%	0
5th Grade	0	24%	71%	0	5%

Content of lessons is challenging for most students. — Content of lessons easily mastered by most students.



	A	B	C	D	E
3rd Grade	25%	20%	45%	10%	0
4th Grade	6%	55%	39%	0	0
5th Grade	19%	56%	25%	0	0

A great deal has been said recently about "math anxiety", "fear of mathematics", etc.

Have you ever been "math anxious"?

	3rd Grade	4th Grade	5th Grade
Never or hardly ever	41%	42%	47%
Occasionally as a student but not as an adult	25%	31%	24%
Still am once in a while	24%	25%	29%
I am definitely a math anxious person	10%	2%	0

Comments: Virtually all mean scores were between B and D; overall, 42% of the responses were "C" and 21% were either A or E. The responses by grade level were quite similar with a slight tendency of the higher grade teachers (4th and 5th grade) to see math as easier to teach (last item), math class to be a more favorite time of the day (6th item), the content of the lessons to be more challenging (4th item), and to be more oriented towards creative activities (8th item).

Overall, nearly a third of the teachers reported some degree of math anxiety; this tended to be less in the higher grades.

Teacher Training

About how many hours of teacher training did you receive before you started to teach CSMP?

	3rd Grade	4th Grade	5th Grade
None	5%	3%	11%
1-9 hours	20%	24%	0
10-19 hours	12%	0	17%
20-25 hours	15%	14%	17%
30-32 hours	30%	3%	11%
40 hours	12%	46%	0
≥48 hhours	5%	14%	44%

About how many hours of training did you receive, if any, after you started to teach CSMP?

	3rd Grade (n = 41)	4th Grade (n = 25)	5th Grade (n = 17)
None	51%	56%	65%
1-10 hours	17%	8%	12%
≥11 hours	32%	36%	23%

Who conducted this training?

	3rd Grade (n = 34)	4th Grade (n = 32)	5th Grade (n = 15)
CEMREL	35%	53%	44%
Coordinator/Math Director	50%	22%	31%
Resource Teacher	12%	6%	0
Other Teachers	0	0	13%
Other	3%	19%	12%

Do you have any suggestions for improving the teacher training program for CSMP?

	3rd Grade (n = 41)	4th Grade (n = 33)	5th Grade (n = 18)
No comment	29%	33%	39%
No, favorable	27%	18%	11%
Yes, more time is needed	7%	12%	17%
Yes, hold a second workshop for experienced teachers	7%	12%	17%
Yes, it was too difficult or progressed too quickly	2%	6%	6%
Other	29%	33%	39%

Comments: At the present time, the recommended amount of CSMP training is 32 hours for 3rd grade, 40 hours for 4th grade and 48 hours for 5th grade. It can be seen that about 1/2 of the teachers received less than this amount of training before school started. However, over 25% also received more than 10 extra hours of training during the school year. Almost half of the teachers had some suggestions to make regarding the training program.

About how long is the math period each day?

	3rd Grade	4th Grade	5th Grade
Less than 45 minutes	19%	19%	6%
45-50 minutes	40%	22%	17%
51-59 minutes	9%	8%	12%
60 minutes or more	30%	35%	59%
Varies	2%	16%	6%

How much more time or less time is this than with previous math programs you have used?

	3rd Grade (n = 30)	4th Grade (n = 31)	5th Grade (n = 12)
Same	63%	71%	58%
Less time with CSMP	0	3%	0
*More time with CSMP	37%	26%	42%

*More time with CSMP was reported in the following categories:

	3rd Grade	4th Grade	5th Grade
5-10 minutes more with CSMP	7%	16%	25%
More than 10 minutes more with CSMP	20%	7%	17%
Unspecified more	10%	3%	0

About what percent of this time is spent on:

	3rd Grade	4th Grade	5th Grade
Teacher-led work?			
≥ 75%	45%	26%	18%
51-74%	14%	32%	35%
50%	19%	18%	12%
Small group work?			
≥ 50%	2%	6%	6%
Individual work?			
≥ 50%	2%	12%	6%
Other:	18%	6%	23%

By the end of the school year, how far do you expect to get in the numerical strand ("World of Numbers") of the CSMP schedule?

	3rd Grade (n = 38)	4th Grade (n = 29)	5th Grade (n = 14)
96-100% completed	66%	48%	43%
83-95% completed	18%	28%	50%
72-80% completed	11%	4%	7%
52-69% completed	5%	10%	0
Less than 50% completed	0	10%	0

If you are more than a week behind the numerical strand on any of the other strands, please indicate which ones. (Because the number of teachers responding to this question were so small, percentages were not computed).

3rd Grade	4th Grade	5th Grade
n = 3 (38%)	n = 9 (31%)	n = 5 (36%)

Of this total of 17 teachers, 7 said they were behind in all other strands. Probability and Geometry/Measurement were each named by 5 teachers.

Have you had to make any changes in the CSMP schedule?*

	3rd Grade (n = 39)	4th Grade (n = 27)	5th Grade (n = 11)
Omitted lessons	59%	41%	45%
Repeated or extended lessons	77%	67%	55%
Made lessons longer or shorter	69%	33%	55%
Other	13%	15%	27%

*Percentages do not sum to 100, since many respondents checked more than one of the above.

Do you supplement CSMP with additional activities?

	3rd Grade	4th Grade	5th Grade
Yes	100%	85%	89%
No	0	9%	0
Rarely	0	6%	11%

If so, a) What proportion of these activities are teacher-led (versus paper-and-pencil)?

	3rd Grade (n = 38)	4th Grade (n = 19)	5th Grade (n = 9)
Teacher-led:			
65-100%	8%	16%	0
40-64%	66%	47%	33%
11-35%	18%	11%	33%
0-10%	8%	11%	33%
Other:	0	15	0

b) Is it usually for:

	3rd Grade (n = 40)	4th Grade (n = 27)	5th Grade (n = 17)
A few minutes at a time	40%	30%	41%
A full math period	28%	26%	23%
Both of the above	15%	0	12%
Several consecutive math periods	10%	30%	18%
Daily	2%	11%	6%
Other	5%	3%	0

c) Over the course of the year, about what percent of the math time is used for this supplemental work?

	3rd Grade (n = 35)	4th Grade (n = 27)	4th Grade (n = 15)
Less than 10%	23%	22%	47%
10-19%	26%	27%	20%
20-29%	37%	22%	20%
30-50%	14%	22%	13%
60-95%	0	7%	0

d) This supplemental work is:

	3rd Grade (n = 18)	4th Grade (n = 15)	5th Grade (n = 11)
In addition to CSMP time	33%	27%	27%
During the time allotted for CSMP	67%	67%	73%
Both	0	6%	0

e) How does this supplementing compare with the amount and type of supplementing you used with previous math textbooks or programs?

	3rd Grade (n = 28)	4th Grade (n = 14)	4th Grade (n = 11)
Same amount and:			
same type	36%	29%	9%
different type	7%	7%	0
Less with CSMP and:			
same type	7%	29%	27%
different type	0	7%	9%
More with CSMP and:			
unspecified type	50%	29%	55%

About what percent of your students usually complete:

	3rd Grade (n = 41)	4th Grade (n = 14)	5th Grade (n = 9)
the * workbook			
100%	55%	43%	78%
90-99%	23%	14%	22%
70-89%	20%	36%	0
< 70%	2%	7%	0
the ** workbook			
≥ 90%	23%	14%	22%
70-89%	23%	7%	44%
50-69%	23%	21%	33%
30-49%	15%	21%	0
10-29%	15%	36%	0
the *** workbook			
≥ 70%	12%	8%	11%
50-69%	15%	8%	22%
30-49%	20%	0	22%
20-29%	24%	31%	11%
10-19%	5%	31%	33%
0-9%	24%	23%	0

Do you correct them one at a time or in teacher-led sessions

	3rd Grade	4th Grade	5th Grade
One at a time	49%	50%	38%
In teacher-led sessions	24%	18%	12%
Both	27%	32%	25%
Graded by parent-volunteers	0	0	25%

Comments:

1. Progressively more time is spent in math at successive grade levels, and about 1/3 of the teachers reported this time to be greater with CSMP than with their previous math program.
2. Except at fourth grade, teachers generally expected to complete most of the schedule. At fourth grade, about 20% of the teachers did not expect to.
3. About half the teachers (less in fifth grade) spent at least 20% of their math time in supplementary activities, and tended to do so more than they supplemented their previous math program.
4. Most teachers made changes in the CSMP schedule - most often by repeating or extending a lesson.
5. The finding that most teachers would like to see tests built into the curriculum materials is consistent with previous questionnaire data.
6. There was a wide range in the percentage of students completing the workbooks for each of the one, two and three-star categories of workbooks. Generally, fifth grade students tended to complete more of them at each level.

Comparisons With Other Math Programs

How would you rate CSMP compared to previous math programs you have used on the following items? (Please omit this question if you have not taught this grade math with a different textbook or program.)

Number of respondents varied for each item, but were roughly 29 for 3rd grade, 30 for 4th grade, and 13 for 5th grade. The "mean" scores for each grade level are shown by arrows for items b) - i).

a) Time required for daily preparation is

	(less)	(about the same)	(more at first but about the same after a year's experience)	(more at first and continues to be after a year's experience)
3rd Grade	13%	6%	55%	26%
4th Grade	18%	21%	47%	14%
5th Grade	8%	8%	61%	23%

b) Overall quality

	(much lower)	(slightly lower)	(about the same)	(slightly higher)	(much higher)
			↑5 ↑3	↑4	
3rd Grade	4%	30%	18%	15%	33%
4th Grade	3%	10%	14%	38%	35%
5th Grade	0	31%	31%	15%	23%

c) Student interest and involvement

	(far less)	(a little less)	(about the same)	(a little more)	(far more)
				↑5 ↑3 ↑4	
3rd Grade	3%	20%	17%	20%	40%
4th Grade	3%	7%	14%	38%	38%
5th Grade	0	9%	27%	37%	27%

d) Students' achievement in computation skills

	(far less)	(a little less)	(about the same)	(a little more)	(far more)
		↑3,5	↑4		
3rd Grade	30%	27%	27%	3%	13%
4th Grade	10%	35%	24%	24%	7%
5th Grade	17%	42%	25%	16%	0

e) Students' achievement in mathematical concepts

	(far less)	(a little less)	(about the same)	(a little more)	(far more)
			4 3 5		
3rd Grade	3%	10%	43%	17%	27%
4th Grade	0	23%	17%	43%	17%
5th Grade	0	18%	19%	36%	27%

f) Students' ability to do logical reasoning

	(far less)	(a little less)	(about the same)	(a little more)	(far more)
				3,4,5	
3rd Grade	0	3%	23%	30%	43%
4th Grade	0	7%	14%	45%	34%
5th Grade	7%	0	14%	36%	43%

g) Students' facility in solving word problems

	(far less)	(a little less)	(about the same)	(a little more)	(far more)
			3 5 4		
3rd Grade	10%	43%	23%	17%	7%
4th Grade	3%	16%	39%	32%	10%
5th Grade	18%	18%	9%	46%	9%

h) Appropriateness for <u>low</u> ability students

	(much lower)	(slightly lower)	(about the same)	(slightly higher)	(much higher)
		3	4,5		
3rd Grade	40%	20%	20%	20%	0
4th Grade	25%	21%	29%	18%	7%
5th Grade	25%	33%	8%	25%	8%

i) Appropriateness for <u>high</u> ability students

	(much lower)	(slightly lower)	(about the same)	(slightly higher)	(much higher)
				3,4 5	
3rd Grade	3%	3%	10%	27%	57%
4th Grade	0	0	13%	40%	47%
5th Grade	0	0	0	31%	69%

Comments: CSMP was rated as much more appropriate for high ability students compared to the previously used math program. Students' ability to do logical reasoning was rated much higher, as was student interest and involvement.

On the other hand students' achievement in computational skills and its appropriateness for low ability students was, on balance, slightly less than the previously used math program.

The responses tended to be quite similar for the various grade levels, though fourth grade teachers tended to be slightly more favorable towards CSMP.

Many of these questions have been asked in previous questionnaires. Responses from different grade levels can be compared by coding the responses from 1 (least positive) to 5 (most positive). Table 2 shows this comparison, where responses in different years of the Extended Pilot Test have been combined by grade level.

Table 2
Mean Scores by Grade/Year
for Repeated Questionnaire Items
(Kdg. - 5th Grades)

Grade Level	K	1	2	3	4	5
(N)	90	110	55	86	57	14
Student Interest and Involvement	4.5	4.8	4.4	3.8	4.1	3.8
*Student Overall Achievement	4.4	4.3	4.1	3.1	3.3	3.1
Appropriateness for low ability students	3.0	2.6	2.9	2.5	2.6	2.6
Students' Facility with Word Problems			3.2	3.0	3.6	3.1
Students' Logical Reasoning Ability			4.2	3.1	4.4	4.1
Overall Quality	4.4	4.6	4.5	3.7	4.0	3.3

It can be seen that K-2 teachers have generally rated the program more favorably than teachers at higher grade levels. But from second grade upwards, there is no clear trend. One can get a quick measure of overall rating by averaging across the six categories. The mean scores for grades 2-5 are, respectively: 3.9, 3.2, 3.7 and 3.3.

For which of the following strands did you think there were too many lessons in the Guide? Too few lessons?

	Too Few			About Right			Too Many		
	3rd	4th	5th	3rd	4th	5th	3rd	4th	5th
World of Numbers	10%	20%	13%	85%	71%	81%	5%	9%	6%
Languages of Strings and Arrows	3%	6%	0	79%	91%	88%	18%	3%	13%
Geometry & Measurement	30%	15%	6%	38%	61%	75%	33%	24%	19%
Probability & Statistics	*	6%	0	*	53%	50%	*	41%	50%

*No Strand in Third Grade Program.

Which lessons went particularly well?

(Responses are summarized according to the Strand in which the indicated lesson occurred.)

	3rd Grade	4th Grade	5th Grade
Numeric	78	37	31
Language of Strings & Arrows	29	24	16
Probability	11	5	5
Geometry	6	3	11

Which lessons went particularly poorly?

	3rd Grade	4th Grade	5th Grade
Numeric	27	30	13
Language Strand	5	12	5
Probability	21	8	4
Geometry	5	9	17

Comments: In comparing the lessons which went well with the lessons which went poorly, it can be seen that the numeric and language strands produced many more positive responses than negative, while the probability and geometry strands produced slightly more negative than positive responses. This agrees with responses to the first item, in that there was a slight tendency for teachers to think there were too few lessons in the numerical and language strands and too many in the probability and geometry strands.

Were there any skills or concepts that CSMP assumed students would know at the beginning of the year, which, in fact, many did not know?*

	3rd Grade (n = 37)	4th Grade (n = 34)	5th Grade n = 16)
No	32%	29%	6%
Yes, basic facts	35%	41%	69%
Yes, algorithms	27%	38%	38%
Yes, decimals or fractions	0	12%	13%
Yes, CSMP-specific material	11%	26%	13%
Yes, (unspecified)	3%	6%	0
Yes, (other)	8%	0	0

Are there any skills or concepts that you think students should know by the end of this year which are not adequately covered by CSMP?*

	3rd Grade (n = 34)	4th Grade (n = 29)	5th Grade (n = 15)
No	6%	14%	0
Yes, basic facts	44%	38%	20%
Yes, algorithms	32%	52%	67%
Yes, measurement, time, etc.	32%	0	0
Yes, fractions	6%	14%	20%
Yes, geometry	9%	0	7%
Yes, (unspecified)	3%	3%	0
Yes, word problems	3%	7%	20%
Yes, other	6%	7%	13%

What do you think of CSMP's spiral approach, where the teacher goes on to a new lesson in a different strand, even though not all students may have understood the last lesson? (Have you made any adaptations to the spiral approach?)

	3rd Grade	4th Grade	5th Grade
Likes it	54%	49%	29%
So-so	3%	14%	24%
Does not like it	8%	19%	29%
(Spiral is too far apart)	(3%)	(5%)	(12%)
(No mastery occurs)	(3%)	(5%)	(6%)
Only works for some students	8%	11%	6%
Made adaptations	15%	2%	6%
Would prefer consecutive lessons	5%	2%	0
Other	8%	2%	6%

*Percentages do not sum to 100, since many respondents checked more than one of the above.

Would you like to see tests built into the CSMP materials?

	3rd Grade (n = 36)	4th Grade (n = 36)	5th Grade (n = 17)
Yes	83%	72%	94%
No	14%	25%	6%
Not sure	3%	3%	0

If so: About how frequently:

	3rd Grade (n = 28)	4th Grade (n = 24)	5th Grade (n = 15)
Twice a year:	11%	13%	7%
Quarterly	25%	29%	40%
Bimonthly	4%	21%	20%
Monthly	46%	25%	27%
Every week or biweekly:	11%	8%	0
Other:	3%	4%	7%

For what purpose?*

	3rd Grade	4th Grade	5th Grade
As a progress check	50%	35%	36%
For diagnostic purposes	7%	17%	7%
To assign grades	25%	39%	43%
For parents or administrators	14%	17%	7%
To see if teacher is succeeding	4%	9%	14%
To evaluate program	18%	0	0
Other	0	13%	7%

Empasizing what content?*

	3rd Grade	4th Grade	5th Grade
All material covered	74%	50%	47%
Computation	22%	30%	40%
A particular strand or strands	0	15%	13%
Other	4%	5%	0

* Multiple answers were possible; therefore percentages do not sum to 100.

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What are the students' reactions to the workbooks?
Do you have any comments or suggestions about the workbooks?*

	3rd Grade	4th Grade	5th Grade
Students like them	49%	58%	65%
Too time-consuming to grade	7%	8%	0
Need more of them	12%	3%	0
Fun for only some of the students (usually the above-average)	2%	8%	0
Students do not like them	2%	0	0
Other critical or suggestion	34%	22%	35%

What is the largest class size (with students of about the same ability as you have now) that you feel you can effectively teach with CSMP?

	3rd Grade	4th Grade	5th Grade
20 or fewer students	33%	35%	35%
21-24 students	10%	14%	29%
25 students	28%	30%	18%
26-29 students	10%	8%	6%
30 or more students	18%	14%	12%

Would you find it useful if CSMP established a "hot-line", which teachers could use to ask specific questions about the program and how to teach it?

	3rd Grade (n = 35)	4th Grade (n = 29)	5th Grade (n = 16)
Yes	60%	69%	50%
No:	11%	14%	25%
No, already received help from resource teacher/ CEMREL staff	17%	7%	6%
Other (e.g. "I don't need one, but it's a good idea; I'd call without a hotline if I had a problem; I'd rather have a local line of help.")	11%	10%	19%

*Multiple answers were possible; therefore percentages do not sum to 100

What are the best aspects of CSMP?*

	3rd Grade	4th Grade	5th Grade
Fun/interesting/motivating	46%	41%	32%
Logical thinking/problem solving	30%	49%	44%
Challenging/Provides 3 levels of difficulty	20%	22%	25%
Mental work	10%	11%	25%
Spiral approach	33%	14%	13%
Diverse student materials/workbooks	10%	8%	0%
Presence of advanced topics (e.g. decimals, negative numbers), concepts other than the "basics"	13%	3%	13%
CSMP-specific materials (e.g. minicomputer, strings)	24%	24%	13%
Promotes understanding of concepts	0	0	25%
Other	22%	38%	38%

What are the worst aspects of CSMP?*

	3rd Grade	4th Grade	5th Grade
Not enough drill & practice	32%	31%	40%
No allowance for those who don't know their basic facts/assumes prior knowledge	19%	12%	13%
Not appropriate for low-ability students	8%	12%	13%
Difficult to check work	5%	12%	6%
Too much teacher-led/no time for small group or individual help	19%	12%	6%
Lack of evaluation method	5%	6%	20%
Lessons too long/children's short attention span/Too many lessons	3%	15%	6%
Spiral Approach	11%	6%	0
Arrangement & number of materials	8%	15%	0
Teacher preparation	8%	3%	6%
Probability lessons	8%	3%	0
Lacks specific types of problems (e.g. word problems, metrics)	5%	9%	0
Other	27%	39%	33%

*Multiple answers were possible; therefore percentages do not sum to 100.

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Has your impression of CSMP changed since you first began using it?

	3rd Grade	4th Grade	5th Grade
Yes, for the better	36%	31%	50%
Yes, for the worse	21%	26%	13%
Yes (unspecified)	5%	0	0
No change, still positive	5%	14%	6%
No change, still negative	3%	6%	0
No change (unspecified)	26%	14%	19%
Other	5%	9%	12%

Please give your overall evaluation of CSMP

	3rd Grade	4th Grade	5th Grade
Good, unqualified	31%	37%	38%
Good, with minor reservations	39%	26%	23%
Good, with major reservations	22%	37%	31%
Not appropriate for slow students	(8%)	(15%)	(15%)
Should not be used as a complete program (lacks basics)	(6%)	(22%)	(8%)
Only for grades K-2 or K-3	(8%)	(0)	(0)
Not good	8%	0	8%

The Low Ability Student Discrepancy

Through the EBT there has been a consistent anomoly, termed "The Low Ability Student Discrepancy". It consists of the following two facts:

1) Every year, teachers give a much less positive rating to CSMP in regard to its appropriateness to low ability students than in any other regard (see Table 2, page 23)
2) End-of-year achievement tests and MANS scores (see Evaluation Reports 6-B-1, 5-B-1 and 4-B-2) show that low ability CSMP students generally do as well as, or better than, low ability Non-CSMP students at all grade levels tested.

In an attempt to investigate this discrepancy more closely, the following questions were asked on the teacher questionnaire:

How is CSMP working with your low ability students?

	3rd Grade	4th Grade	5th Grade
Poorly	41%	33%	67%
No problems	38%	39%	33%
Not sure/mixed	14%	14%	0
*No slow students in class	7%	14%	0

*7% of the 3rd grade teachers and 8% of the 4th grade teachers stated that slow students are removed from their CSMP class at math time.

Are they better off in CSMP or in a more traditional program?

	3rd Grade	4th Grade	5th Grade
Better off in a traditional program	52%	39%	47%
Better off in CSMP	33%	18%	27%
No difference or mixed	15%	42%	27%

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Generally, which instructional methods do you find work best with these students?

	3rd Grade	4th Grade	5th Grade
Drill & practice	42%	31%	46%
Small groups	11%	21%	8%
Individual help	14%	24%	8%
Teacher-led sessions	11%	0	8%
Manipulatives	22%	3%	8%
CSMP methods	19%	0	23%
Other	0	10%	8%

Some teachers have indicated that CSMP may be less appropriate for low ability students than a traditional program. However, test data seems to indicate that they do about as well as low ability Non-CSMP students do. How do you account for this discrepancy?

	3rd Grade (n = 34)	4th Grade (n = 17)	5th Grade (n = 15)
I supplement CSMP with other math work	26%	12%	13%
Maybe they get more out of it than we see on a day-by-day basis.	6%	12%	20%
Teachers only consider computation skills	6%	12%	13%
I cannot account for this discrepancy	15%	6%	13%
Other	9%	18%	13%
Did not address question asked	38%	41%	27%

The most popular response did not directly address the question, instead, reasons were given to explain why CSMP did or did not work well with low ability students. Other responses (given by two or more teachers) were:

- Teachers feel more secure in assessing the progress of children in a traditional math program
- They may test well, but they're too frustrated on a day-by-day basis.
- The really low CSMP students are not being tested in the evaluation.
- The tests are not measuring the same things as those to which the teachers are referring.
- Maybe this is true only of students who have been in CSMP since kindergarten or first grade.

See Appendix for verbatim responses to this question.

Summary

In the spring of 1979, questionnaires were sent to all 158 teachers of third fourth and fifth grade CSMP. The rate of return was 51% overall, with higher percentages of return for fourth and fifth grade teachers and lower for third grade teachers. Twenty-five of the fourth and fifth grade teachers were also interviewed.

About 40% of the teachers responding indicated that this was their first year of teaching CSMP, though the median teaching experience was in the range of 6-10 years. A number of the fourth grade teachers were teaching classes which were new to CSMP and were studying a special Entry Program; generally responses from these teachers did not differ much from teachers of veteran fourth grade classes.

The responses are summarized in two sections: Implementation and Evaluation

Implementation

1. About half of the teachers received the prescribed number of hours of training before beginning to teach the program. About half also received some follow-up training during the course of the year (page 13).

2. The most common amount of time for math class with CSMP was either 45-50 minutes per day, or 60 or more minutes per day, but there was considerable variation. The amount of time increased by grade level. About 1/3 of the teachers were spending more time than they did with their previous curriculum (page 15).

3. Almost all of the fifth grade teachers expected to complete most of the schedule of lessons (at least 83% of the lessons), while about 80% of the third and fourth grade teachers expected to do this (page 16).

4. About 2/3 of the teachers occasionally repeated or extended lessons and about half said they omitted some lessons. About 1/3 of the teachers got farther in the numerical strand then in the other strands; many teachers thought there were too many lessons dealing with probability and statistics (page 16 & 25).

5. Almost all teachers supplemented the program in some way, usually with computational practice. This was done in a variety of ways and there was much variation in the proportion of total math time used for supplementing, the median being about 20% (page 17).

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6. Most teachers would like to see tests built into the instructional materials (page 27).

Evaluation

1. When asked to compare CSMP with previously used math programs, CSMP was, on average, rated higher in student interest and involvement, appropriateness for high ability students, and promotion of student learning of math concepts and logical reasoning (page 21 & 22). The most frequently mentioned "best aspects" of the program were high level of motivation and logical thinking/ problem solving (page 29).

2. CSMP was rated lower in development of computational skills and appropriateness for low ability students (page 21 & 22). About half the third and fifth grade teachers (less in fourth grade) indicated that low ability students would be better off in a more traditional program (page 31).

3. CSMP's spiral approach was generally liked by third grade teachers, though many made adaptations to it. Teachers were less favorable in the higher grades; by fifth grade they were equally divided on this issue (page 26).

4. About 3/4 of the teachers said that the CSMP curriculum assumed certain entering prerequisites which students did not have, and even more teachers said that there were some skills or concepts CSMP did not adequately cover during the year. The concern in both cases dealt with computational skills (page 26). Insufficient drill and practice was also the most mentioned "worst aspect" of CSMP, by about 1/3 of the teachers (page 29).

5. The final item on the questionnaire was an open-ended question asking for an overall evaluation of CSMP. About 90% of the responses to this question were, on balance, favorable to CSMP; about 1/3 contained important reservations or qualifications (page 30 and especially Appendix A where verbatim responses are given).

In summary, most teachers seemed to implement the program in a reasonable way, with fairly normal adaptations. And, although criticism was expressed concerning the related issues of computational skill development and some problems with low ability students, it is clear that a great majority of teachers had favorable overall reactions to CSMP.

Appendix: Overall Evaluation

In a paragraph, please give your overall evaluation of CSMP.

For this and each of the other Appendices,
the responses are grouped in the following way:

Third Grade Teachers
Fourth Grade: Teachers of "Entry" Classes
Fourth Grade: " " "Veteran" Classes
Fifth Grade Teachers

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Third Grade

- CSMP is a good program if students can understand their basic skills.

- CSMP is a good program for developing critical thinking. The children like the minicomputer and the language of strings and arrows, which serve as excellent tools for motivation. However, I think the program does not adequately give enough practice in computational skills for mastery of skills. There should be a follow-up of traditional exercises to accompany each CSMP lesson.

  Also, the teacher guides are complicated to use. It is very difficult to have to use four different guides to teach one subject. The spiral effect could be attained in one volume.

- It is an excellent program, excels in promoting thinking skills and understanding concepts. It needs more emphasis on computational skills and more built-in allowance for individual differences - mainly for the highly advanced student. It takes a great deal of teacher-time to prepare for and check lessons.

  I would like to have learned math this way when I was a child!

- I feel I've said it all above!

- The program has provided the children with several vehicles for logical thinking but there is not enough instruction for teachers new in the program and definitely too much paper work.

- CSMP is a very good program, however, I feel it should be restricted to a smaller ratio of pupils.

- I have enoyed teaching CSMP. The class enjoys the lessons, and the manuals plus prepared work sheets make it very convenient for the teacher. I receive many parental complaints about their inability to help the children at home and the fact that when they discuss math, they cannot use the same "terminology".

  I see much potential in this program but to be totally effective it must be used more widely in a certain school system thar it is being used in ours.

- I really enjoy teaching it. The children seem to enjoy it also. I feel that it really encourages the average and above average child to think. However, some of the low children go from one lesson to the next without understanding the concepts and relationships.

- CSMP is enjoyable to teach and challenging with high interest level for children. I think better provision should be made for evaluating pupil progress, for stressing computation skills and most important for informing parents so that they have a more accepting attitude of the program.

- I like CSMP. I don't like the poor organization of all the heavy books and lack of independent work that can be graded partly by the students. I would not care to teach a purely traditional math course any more, but please organize the program better.

- CSMP appears to be a very good program for the above average children. For the others, however, too much of the program involves lessons with an over abundance of reasoning for them to cope with. At this age, the majority become easily frustrated when they do not have more concrete work to deal with. These children seem to drift along with the group, never really progressing individually as they should.

- The best mathematics program I have been exposed to - both as a student and as a teacher. I wish we had had it back in the fifties.

- I think the program is great. I like the philosophy that the program is built on - an extension of students' experiences. The lessons have great variety and are of high interest to kids. It makes kids <u>think</u> in a fun way.

- It makes math easy and fun to teach. I find that my enthusiasm spreads to my class and math becomes a positive experience for all.

- I feel that CSMP might be good if it began at first grade and continued with that class of children. However trying to teach CSMP to third and fourth graders who have had other programs is extremely difficult. Also many of the teacher led lessons have the teacher doing too much and the students too little.

- CSMP is interesting and the children are able to advance with skills being taught. I feel that the teacher's guides should be in hardback binding and that one large guide be used with answers on same page as lessons so that using the book and teaching the lesson can be easier for the teacher to use.

- Good exciting program for lower primary grades, but should be phased out somewhat by 3rd or 4th. Spiral approach is a good one! Program is well organized and planned. Certain lessons could use better explanation for the teacher.

- I am pleased to be teaching CSMP and feel that it is the best math program I've come across to date. There are some problem areas in 3rd grade which are in need of clarification - however, much is undoubtedly in the way in which I present the lessons. I find keeping the students' attention when not directly being questioned is somewhat of a problem . . . some lessons move too slowly, especially those of transforming numbers on the minicomputer. On the whole, however, there is an excitement and anticipation of a Detective Story or mystery to be solved, or a newspaper to be shared that makes math a period which passes quickly. They especially enjoy the String Game!

  (This year's class certainly did not shine in our SRA Achievement Test results however - 15 out of 24 were in 4th stanine or lower.)

- It is effective for those students who are proficient in the basic skills. However, the program I find is hard for the children to apply on paper apart from the particular lesson. The teacher is too much involved and so often the time elapses before the students have had adequate time to use the concepts and skills.

- Many of the lessons are very good and fun for all involved. There just isn't enough drill on the basic addition, subtraction, multiplication and division facts. The program is too hard to introduce to <u>new</u> students who have had traditional math for two years and will have no more CSMP after third.

- CSMP is one of the finest, most logical, most exciting math prgrams I have been exposed to. I wish it had been around when I was in elementary school. It's a program tailored for elementary students - their needs and things that "turn them on" - not for mathematicians.

- After 1 year of teaching I will admit I liked other programs. I had so much preparation, and sometimes I didn't understand what was going on. My frustration showed at times I'm sure. But it was a good experience and look forward to my second year going a little more smoothly.

- CSMP offers the child a thinking-reasoning approach that is necessary to cope in a complex changing world. The student participation in the lessons is priceless.

- Good

- I am pleased with the possible effect of developing one's reasoning skills. I also feel that concepts are presented as priority items. However, there seems to be a great deal of teacher directed "lecture" periods during which students lose interest. Also: the manuals are unneccesarily lengthy. (I don't need quotations of teacher or pupil responses)

- The 3 languages of CSMP present an excellent motivational tool for teaching mathematics to young children. The non-verbal languages of strings and dots are an excellent way to classify things with logical explanation The arrow language is an intriguing way of showing number relationships. The minicomputer has served as an excellent way to extend the understanding of negative integers and for introducing decimals. Fun!! Speaking as a "math" anxious teacher (previous to CSMP) I find this program intriguing, fun and most importantly, COMPREHENSIVE!

- CSMP is a low-pressure math program that's fun to teach and fun to learn. Thank you!

- I thoroughly enjoyed teaching the revised Grade 2 Edition and I hope the revised Grade 3 edition will be just as superb!

- I do not think it is for everyone. Many students have not learned their basic facts and they have to stop and figure even the simplest addition problems out.

  It is great for the more advanced student. They know their basic addition and subtraction and can proceed with the vast amount of mental calculations.

  Overall, I enjoy teaching it, and would hate to go back, but next year I am going to do drill on the addition and subtraction facts.

- It is the absolute worst program that I have seen in all my years of teaching. I have shown it to many math professors and teachers, and also business people and they cannot believe it. We were railroaded into this by (our coordinator).

- There should be a transition from CSMP to the traditional math, if CSMP is not being taught in the 4th, etc., grades.

  The children are expected to know traditional math in the intermediate grades. I have supplemented the CSMP program to help make up this deficiency.

- Program promotes teacher motivation and enthusiasm. Children enjoy the great variety and unusual means of presentation.

- Generally I enjoy teaching CSMP, and especially appreciate its creative and challenging activities. I think this program is excellent for the child who has a general comprehension of basic addition, subtraction, etc. skills. I feel too often the lessons assume that such concepts are mastered. At this age level, for many students, time and repetition are needed for such mastery. Telling time and money are 2 other areas that I feel are important and need attention.

- Last year I changed my method of teaching CSMP. I combined CSMP and basic math and have found my students are doing a much better job.

- There should be a transition from CEMREL to a regular program. Our fourth graders go back into a traditional program and are expected to know their facts.

- Some concepts are tremendous. I should have known/been informed that I was to have given an evaluation. I would have kept notes that would have been more useful and to the point. With so much to do at the end of school, trying to recall a year's work is impossible. There is a lot of work that is a waste of time (as stated above). It helped some by having the children write what was being put on the board - even then, if you can't see what each one is doing, they may not comprehend and put down anything.

Entry classes

- CSMP should never replace the regular math program. It should only supplement the regular program.

- Most effective with group of 25-30 at most.

- CSMP is an interesting and challenging study of mathematics. It helps the children to develop their curiosity, imagination, intuition and reasoning. The children are exposed to a wide variety of ways in which mathematics can help them to think about problems.

- I believe in an approach that doesn't only emphasize memorization of facts, tables, formulas, etc. Hence CSMP is a good approach for most children. The non-verbal aspects are good as too many children are forced at an early age to verbalize and work with paper and pencil to learn math concepts. Emphasis on thinking process is major strength of CSMP program.

- I enjoyed teaching the program, but I constantly felt inadequate in terms of reaching the children at the higher and lower levels of understanding. At times I felt overwhelmed by papers and never had enough time for individual help for all the children.

Veteran classes

a. new teachers

- Generally high appeal for student.
Lesson occasionally extremely long.
Shorter lessons would be an advantage
Covering less in presentation with more student work on paper with concepts. Too few students can be involved with board work - need more individual application.
Would like to see more work with bases, and place value.

- It has proven better than I anticipated. I feel that for the average to bright student, it really broadens the field of math from what is traditionally taught. I'm not sure if it is as successful as I would like it to be with the below average student.

- Dropping back to "basics" and such a comprehensive review not necessary at beginning of Part II.

- It's generally fun for both teacher and class. It stimulates mathematical thinking. It encourages mental computation. Some passive students and poorly motivated stand a good chance of getting lost- particularly in <u>total</u> class discussions - and these take up a large part of CSMP.

- The CSMP develops thinking skills and captures the interest of many children. It is especially great for the bright child.

- I think the program is great, the students have fun with it. However, as I mentioned earlier I needed (and still need) more thorough instructions and staff development to implement the problem efficiently.

- In our school the children's interest and motivation is respected and tapped. At first the children loved it. After a period of 3-4 months the children became bored with it. They did not see that the concepts were being built upon. Comments were made like "oh no, arrows again."

  Since their interest and motivation fell we switched back into a traditional book approach which the children had requested.

  I like CSMP + its approach and I am determined to try it again this year with a few modifications (more supplementing instead of rigidly sticking to the program - and less review time).

- It is hard to truly evaluate this program, because I don't know what comes before or after 4th grade. However, in general, I think the program in terms of teaching basic skills is not as effective as my other math program. The opportunities for working with concepts and logical thinking are beneficial. But overall, I am not comfortable working with thisprogram in terms of being sure the children are gaining the proper skills, effectively, at this grade level.

- Children enjoy the various ways the lessons are. They enjoy the games and the work sheets.

- I find CSMP to be a program that can be fun and challenging. I think that CSMP should place more emphasis on learning the basic math facts because those children generally do much better in my CSMP classes.

- I love it. For a teacher with high math anxiety like myself, it is a Godsend.

- The Elementary Department here at (our school) has plugged in nicely to our campus school Math Curriculum. Dr._____ has a complete set of the materials and he does introduce our Elementary Education students to CSMP program. Many of the students teach the lessons to individuals in our school. At first they are skeptical concerning the program, but in most cases the experience has been positive. I enjoy working with the material; math was not my favorite area before CSMP.

- I like it, the kids like it and I am just waiting for the day I get a new student and he says, "That's the math we had at our old school".

  It really teaches them how to think better.
  I don't think they learn multiplication facts as well as they should. It sometimes does not work where they are expected to know more than they do.

- I can't say enough good things about the program. I enjoy teaching it as much as the children do working in it. I have observed children having success who in the past were having trouble with math and who really disliked it. Watching these children transfer their knowledge to pencil and paper activities is very rewarding.

Veteran classes

b. experienced teachers

- I feel that the CSMP program shows high interest and provides experiences for the students to reach a higher level of learning and thinking. The program is not adaptable for the average and low average student who need a more basic program that deals with basic computations.

- I am very pleased with the CSMP program, and promote it to others whenever I can. It is fun to teach - interesting - and the children enjoy most of the lessons too. Math is probably more popular now than with traditional methods. I feel the program is better than any that I have seen.

- I feel that more attention should be given to traditional math functions. The children have fun with CSMP and enjoy what we do, but most have some difficulty because of a weakness in basic math facts.

  I went on maternity leave the end of September. The substitute was not trained in CSMP so when I came back in January the class was behind. That is why we will not finish this semester's work.

- Very good. However, I feel you are basing your materials on what you assume the child knows when he enters a grade level. I have found when computational skills (traditional) are low, so goes CSMP - with exceptions.

  Also, the storybooks are too "wordy". Sometimes it misses the whole point of the lesson or attempts to explain what the child has already reasoned before he reads that particular page. Example: Square Trap - after page 6, too wordy, children have come to those conclusions.

- I think CSMP is a great program for getting children involved in thinking at a higher level and in enjoying arithmetic. They are more able to figure things out, I believe. The work is a challenge to all levels - except the rock-bottom couple.

  I, personally, am not so worried about computational skills because I feel that with the reasoning skills they acquire through CSMP, and with the help of a calculator, the children will be able to solve most anything.

- I like some parts of CSMP very much. I do not think that it is a complete program. I feel supplementary material should be made available by CSMP.

  I do not believe that binary numbers are necessary at this level.

- I enjoy the program very much. It's my favorite time of the day. The activities are challenging and well supported. My main concern however and this is not CSMP's fault, lies in the continuity of the program beyond this school. I wish I could give parents acceptable answers to their questions.

- Since I did not have adequate time to fill this out, I'll just say excellent. Please give us more time next time.

- I love it! The kids love it and by virtue of that alone, are learning much more. The thinking and reasoning processes are great. I can see my kids "think" better in other subject areas, too.

- I feel it is a good math program that challenges and enriches the above average to the bright student. It is not a good program for the deprived or culturally poor student who does not have a good math background.

Fifth Grade

- CSMP is great for mental arithmetic, estimation, problem solving, and logical thinking - poor in computational skills.

- Have a low ability group who were introduced to CSMP at 5th grade level. They seem to enjoy the activities presented in your materials. They are most eager to answer questions - volunteer readily - correct each other and really engage in discussion. I have never seen this interest in a traditional setting. They are showing improvement in computation skills, logical thinking and problem solving.

- In general, I feel that CSMP is a fine program for high-average children. I don't feel it should form the core of a math program for those below average in math, although I don't think it needs to be eliminated from their curriculum. Finally, I don't think that the training adequately emphasized 5th and 6th grade work, or the geometry. Otherwise, the training was excellent.

- The program is well written and explained to a rookie. It is also logical and flexible when a teacher wants to extend over the given lesson. The lessons are appealing to the students, with the colorful and interesting stories. Mental thinking and reasoning is practiced and developed by the students much more than in a traditional approach.

- I enjoy teaching CSMP. I don't enjoy marking all the pages, especially the ones where many answers are possible; without extensive parent volunteer help the teachers would be absolutely swamped.

  We have received the results of the Grade 5 Iowa tests and our children did marvelously well.

- I have only taught CSMP one year. The teaching of traditional math (10 min. a day - homework 20 min.) is to cover those students who move and who enter a school that does not teach CSMP. Also, if our district does not extend this program to 7th and 8th grades, these 5th graders will be expected to know the math functions.

  Parents can do very little to help the student who has difficulty so it is up to the teacher.

  31 students in this program is far too many to keep up with the workbooks and sheets.

- I like it! High-ability math students seem to like it better than low-ability ones, especially when a new challenge comes along; but most of them usually end up by liking and/or grasping the new concepts and feeling more comfortable with the material.

- Math preparations are considerably more difficult and children must be present for each lesson or they miss so much due to "spiral" approach - Everyday "common sense" math seems to be lacking as is fundamental drill on number facts.

- I am impressed with the program, but it is presenting some problems with parents and with children who are reluctant to work and come to school to play. Parents complain that the children are not getting the "basics" and that they cannot help them. Presentation and discussion times are dominated by a small minority of children who grasp the concepts quickly and many other children just sit and wait for the others to answer.

- I taught CSMP in 1st grade for 3 years and enjoyed teaching it more each year. I would say that CSMP is a very stimulating, highly motivating math program. However for students with learning problems I'm not sure it is a good idea.

- I feel that CSMP is a good creative program for those who have mastered basic skills, but CSMP does not structurally teach basic skills, so many times students fail to understand. The program would be ideal for the achieving, grade level student, but not for the student who has poor basic skills. Not all children learn the same way or at the same rate and I feel the lessons are constructed to teach that way. It does help to be a creative thinker, to apply skills to other problems, but not all children are ready for that because of maturation levels being different.

- I feel CSMP is a strong program and an attractive program to today's students. I am very much impressed with the constructive thought processes the student is able to formulate having had CSMP.

- It is an excellent program that I enjoy teaching. The children are enthusiastic and attentive during almost all of the lessons. The new students pick it up quickly and that's helpful.

- Some of the lessons are self-motivating. They're more interesting than cut-and dry standard math programs. My main fear still is that you miss too many of the kids with basics. The number of above-average, and even average students is so few.

  The big thing that CSMP does, is it has interesting stories and situations. But when you come back and try a lesson on multiplication or division; even though you may have used that skill in several CSMP lessons - when it's approached as a single entity, there's not the transfer. It's right out the window. So you have to go back and start teaching it over with rote and drill methods. I'm afraid to let them leave 5th grade until they're able to do that. Nabu's not going to be around to help these people balance their bank books.

  I would not want to lose track of the program, but the way we use it needs to be redefined.

  This is another area of concern; parents want to help their children and they can't with CSMP.

  I'd be unhappy to see the program dropped and the materials taken away. On the other hand, I can still remember enough to teach parts of it. Anyway I'd like to see it used more as a supplement.

Appendix: Best Aspects

What are the best aspects of CSMP?

- The mini-computers and the A-blocks
- CSMP makes thinkers of students. The children enjoy using the computer. The use of color chalk also makes it interesting. The stories are enjoyable.
- Building an arrow road, and the Language of Strings are excellent motivational tools for mastery of mathematical facts and the solving of word problems.
- It is interesting, promotes understanding of concepts, increases thinking skills, and encourages logical thinking.
- Visual appeal (arrow roads, strings)
- Games
- CSMP provides opportunities for thinking and exposure to various concepts in Math.
- Creativity, work designed on difficulty levels.
- CSMP is a good program; the children enjoyed it and it makes math easy to learn.
- The child has more drill in mental computations. Things introduced in a memorable fun way.
- The accompanying materials - the motivational quality - consumable worksheets - logical thinking - spiral approach.
- A lot of logical thinking; variety of activities; spiral approach.
- Fun to teach; interesting materials and techniques; stresses thinking abilities rather than rote learning; provides challenging material for superior children.
- Spiral approach, variety in techniques and strategy, high interest materials.
- There are some excellent workbooks and sheets to accompany the lessons. The lessons are varied and interest oriented.
- The challenge for the high average math student, and the more verbal student is wonderful. Teaching them to do CEMREL is pure joy. CSMP must also stress accuracy . . . not just understanding the concept.
- Some interesting mathematics are covered much more in this program than in others. Better understanding of negative numbers than traditional programs.
- Makes children think - makes <u>thinking</u> an enjoyable process.
- Wide variety of lessons - fun things to do.
- It's fun - well presented - variety of techniques and strategies - high interest materials.

- The mini-computers; the Island of Tam Tam; colorful workbooks.

- The challenges for the children. The necessity for the children to really think.

- Variety - flexibility - high interest - different materials.

- Manipulative, fast paced, always changing, uses math skills and concepts in many various ways.

- A varied approach - they never know what to expect next. Good visual format - color, space, not overwhelming pages of problems. Same concept presented in several ways (minicomputer, arrows, etc.) so if they don't get it in one form, hopefully they will the next time (also spiral approach).

- ① Arrow roads/return arrow lessons; ② Mini-computer lessons; ③ Spiral approach; ④ Workbooks/worksheets on levels; ⑤ Student participation; ⑥ String games; ⑦ Detecitve stories; ⑧ Mental exercises

- Colorful, fun, variety

- High interest in some lessons (challenges); no fear of large numbers

- 3 languages are highly motivational - give better background for higher mathematics; individualized consumable materials are a blessing! Development of a definite pattern of comprehensive mathematical thinking becomes evident after children are exposed to CSMP after one full year.

- Spiral approach, string games, minicomputer, active involvement in lessons.

- Mental computation; emphasis on logical thinking; variety of concepts covered

- Excellent for smart, motivated students. It gives them a lot of practice calculating in their heads. It is open-ended and there is no limit to the problems they can come up with.

- None!

- A child is not penalized in math because of a reading deficiency.

- A child is not penalized in math because of a reading deficiency.

- Allows better students to be introduced to more challenging aspects. Child is not penalzied for a reading deficiency.

- Teaches sound mathematical reasoning and creates a high interest in math lessons. I love the prepared worksheets and workbook! The schedule of lessons is very convenient.

- It encourages children to think.

- Thinking is emphasized. The negative number concept as presented is easily mastered. Decimal point ideas are excellent. String Game provide enthusiasm.

Entry classes:

- It helps children to use logic.
- It makes math seem like fun - The better students enjoy it and do well with it.
- Spiral - approved.
- Stimulating and challenging activities
- The "hands-on" activities produce greater enthusiasm in the students.
- Mental calculations - logical thinking-estimation - probability - set theory; teaching thinking skills - best aspect.
- Allows very bright to discover new techniques and see things others don't. Provides them the opportunities to explore math ideas.
- Appeal to children - pupil-teacher interraction. Appreciation of multi-answer problem situations
- Approaches math logically - encourages logical thinking - allows for different computational approaches - encourages all ability levels to "try" - and allows for success on all levels.
- Logical thinking developed; room for different approaches to problems; room for success at different levels.

Veteran classes

a. new teachers

- It teaches logic and how to deal with word problems. It makes the students really think.
- I personally like the methods and techniques of teaching math. It is definitely a brilliant challenge for the students.
- High interest approach in most lessons. Mental ability it develops in most students. Basic development of 4 operations.
- It introduces the number system as a whole and not piece by piece. The emphasis on logical thinking is important.
- Ability to stimulate creative thinking
- The "game" aspect of introducing math thinking and the emphasis on mental arithmetic - includes language of strings lessons and all of the "World of Numbers" except fractions. Workbooks such as "A Set of Problems" and "Collection of Problems".
- The variety of lessons, the spiral, and the stories with illustrations keep the children and teacher interested. When the children are interested, teaching isn't work - it's fun!
- Develops thinking skills and is especially good for bright student. The slow student needs lots of help.

Veteran classes

a. experienced teachers

- String games; detective game; mini-computer
- I find CSMP to be fun at times, challenging, and sometimes frustrating to the students.
- High interest, problem oriented lessons; excellent lesson plans; good workbooks
- The motivation of something "not boring" and the idea that Math period is different and fun.
- The problem solving and ability given to a child to use several methods, all of which are correct, to arrive at an answer.
- The work for fast-slow - high-low students. Interesting - fun to teach. All planned out. Short prep time - especailly after first year.
- Children thoroughly enjoy the detective stories, string and mini-computer golf games, World of Numbers and Language of Strings and Arrow lessons. Geometry lessons good also.
- Produces a higher level of thinking and reasoning; good student interest.
- Makes math more fun and interesting. Teaches logic and practical short cuts in math thinking. Much teacher involvement.
- Mini-computers, string-game, detective stories
- It allows for reasoning abilities to be used far more than traditional math. The child has started to do his own thinking which is transferred to other areas.
- I like the variety of lessons, the challenge and the 3 levels of difficulty.
- It does help children learn how to think. I like the fact that they are learning negative numbers and simple decimals.
- Workbooks - excellent way to introduce and review concepts; Numerical Strand; Language of Strings; Geometry Strand.
- Motivational, challenging, multiple concepts and activities, good mental activities.
- The creativity of the contact; the allowance for open answers; the emphasis on logical thinking; the materials are excellent and accessible.
- Thinking processes! Spiral - as in not beating a concept to death.
- Providing the opportunity for logical types of thinking. Providing for opportunities to explore number patterns.
- It is non-threatening; it makes math fun while being instructive; it provides opportunities for experimentation; it develops reasoning skills.

- Makes math computation a challenge. Game like atmosphere!

- The best aspects of CSMP are: the students do well in reasoning; and students can see relationships.

- Lessons such as the ones I listed as going particularly well are challenging and rewarding for high students in a way "traditional math" is not. These students don't need computational drill and CSMP doesn't bore them and turn them off with such rote work.

- In many instances, "making math fun" for <u>average and above</u> capability students was good.

- The children learn to "think logically", and they learn to "reason" things.

- Bases; mental math; negative numbers; understand relationships better

- Children can use bases better than before. Mental computations seem easier - less reliance on "smaller" problems. Know negative numbers. Understand relationship between + and −; x and ÷.

- It is interesting and to many students - enjoyable. It does provoke thinking. Students do get to draw lines, arrows and etc.

- The ability of the program to help children to think and reason better and to understand the process behind the activity.

- Materials are handy and up to date. Coordinator is available for assistance Teachers guides are clearly understood by teachers.

- It challenges the alert, intelligent learner.

- Teacher guides are very complete. Children are taught to think and come to logical conclusions.

- The lessons are different each day. The stories make them practical. It challenges good math students.

- For the student who has very little or no learning problem, it orientates them to be problem solvers and stresses mental arithmetic.

- It presents a variety of activities and unique approaches to teaching "traditional concepts". This makes the classes more interesting to teach and I do think the children enjoy the variety of weekly lessons instead of suffering a week or so at a time discussing the same mathematical concept.

  The mini-computer is a very versatile manipulative!

- High interest - stress on mental arithmetic and logical thinking - colorful, interesting booklets.

Appendix: Worst Aspects

What are the worst aspects of CSMP?

Third Grade

- I found none.
- Not enough drill exercises to give pupils practice in using what they've learned.
- Needs more practice in computation. Takes much teacher time to prepare for lessons and to check.
- Storage of materials
- 1) Lack of adequate instruction for teachers. 2) Involved paper work
- Assumption that the pupils know basic facts.
- Too much teacher direction, hard to apply to everyday.
- Most of the program is teacher-taught. When placed on paper the children couldn't relate what's on paper to the board.
- Too little drill. Move to another skill before mastery of previous one. Too much pre-planning and studying required before lesson for teacher. Too many manuals and loose work sheets to find for a lesson.
- Preparation of spinners, etc. for probability lessons.
- Not enough time for working with slower kids; the text presumes your lessons will turn out like their's; not enough basic facts.
- Difficult for parents to understand and accept. CEMREL relies on strict attention to teacher-led discussions and interactions with students - at year's end, children seem to stop paying attention no matter what the gimmick - therefore making teacher directed lessons difficult at year's end. More consistent attention should be given to subtraction with regrouping.
- Assumption on part of CSMP of prior knowledge of basic skills.
- There is not enough repetition in some areas. Some concepts, such as multiplication, fractions, division are assumed to be understood prior to some lessons requiring these skills.
- Poor learning of basic facts, which slows the child down.
- My children are given the Stanford Basic test and have done poorly on computations in past years since none of CSMP materials cover what is tested. We teach metric - the test is on linear (for example).
- No number combinations, no word problems - basic facts. Does not go along with Stanford Test.
- It is hard to grade a child when it is required.

- Arrangement of materials. Lack of word problems. Strand teaching. Why not teach a unit and get to the point of what you're trying to teach. Then keep up the skill with fun practice.

- Not enough addition, subtraction, multiplication and division computation is done. Too much abstract thinking for the middle--lower ability students. Too many teacher directed lessons which leave the low ability student not participating or trying. The smarter students carry the lessons along. Lower children had great difficulty with some of the roads they were to build and arrow pictures they had to draw, - they gave up too easily.

- Much too difficult for slow children.

- Correcting some of work pages and workbooks.

- Assumption of prior basic skills

- It's failure to teach and reinforce the basic skills, especially subtraction regrouping and mulitplication. Also the assumption that children can do 1x and other complex functions without practice.

- Teaching a different lesson each day, rather than to continue teaching the same skills.

- The small impact the program has for my low level children. Time and money should be covered.

- Some lessons repeated too often; minicomputer gets boring by 3rd grade level; some lessons seem to be a waste of time (spirals, dice games, etc.)

- Sometimes the lesson seems to go on and on - interest lags. Some children simply cannot perform the functions demanded . . . 7x (they don't know the facts and don't care to add multiples up that high). 3rd Graders don't want to be bothered using minicomputer.

- CSMP should develop a "catch-up" packet for students who move into the district and who are not familiar with CSMP.

- Requires much teacher preparation for one not familiar with the program.

- Long teacher directed sessions. Vague goals.

- Preparation for probability lessons.

- Probability lessons - confusing. Difficulty in grading students.

- Not enough paper and pencil reinforcement of necessary computational skills.

- Some students are unable to follow mentally along. Many students do not automatically know their addition facts. Always had a great deal of trouble using minicomputers; the checkers would get blown off, knocked off, etc.

- The entire program!

- Basics are skimpy. They don't really master them. Lessons where teacher does all or most of the board work with her back to students - no teaching or learning takes place. That is play time for pupils - <u>very few</u> get anything. Children pick up the idea that they don't have to finish.

Entry classes:

- The classroom teacher has no part in the planning of lessons and it is geared toward children who already know and can master the basic skills of math.

- The program does not allow for drill of addition, subtraction and multiplication facts. It seems to assume that the child already knows these facts. The poor students do not perform well in CSMP either.

- Lessons too long.

- Too many lessons taught in a week.

- The problem solving or logical thinking required are difficult for many. They must be drilled in basic computational skills, before they can be expected to set up and work the problems.

- Difficult for some parents to understand. Some parents feel it's another fad or new math again. Calculators.

- Slow children are so lost in whole group lessons - Not enough chance to see individual. Thought process without much time spent on individual sessions.

- Time!!! Materials take up much space - easily lost - Books should be bound in order of sequence of lessons in red book.

- The arrangement of materials (teacher and student) is cumbersome, easily lost. Time to cover material (strands) lacking.

Veteran classes

a. new teachers

- I, as a beginning teacher, with this program needed far more instruction on how to begin. I would have also benefitted from some instructions for the boxes of materials I recived.

- Students do not develop enough familiarty with traditional math which they must meet in all standard tests.

- Late introduction of algorithms; lot of material to manipulate; missing metrics.

- Lack of continual practice with algorithms

- Too little applied math; fraction lessons weak and unclear; "story" workbooks uninteresting and seemingly pointless to students, - Clinton St., Not Too Close, Halloween Puzzles, Square Trap.

- It would be helpful to have all the strands in one book, perhaps with the strands on different colored pages. Also, checking the application worksheets is very time-consuming although necessary.

- Preparation instructions are not always clear. Teacher works at the board too much. Difficult to grade.

- The schedule was difficult to stick to too rigidly.

Fourth Grade (con't)

Veteran classes

b. experienced teachers

- Arrow game - too close to each other - confusing to the children; measuring with meters - children get impatient and frustrated. It's for the brighter children.

- The worst aspects of CSMP is that there are too many lessons. Also, I don't enjoy teaching a different strand each day. I would much rather have more time to repeat a lesson or clear up a problem the students are having with a lesson.

- Not enough manuverability to group according to ability; not enough individualization for poor ability students.

- I don't have any.

- The worst aspect is no allowance for a child who has not mastered his basic skills at a lower level in math.

- Hard to check (especially many answers are possible). I watch them do their work and can tell fairly well if they understand what they are doing. New kids take a lot of extra time.

- Too much time spent on probability strand - might be more profitable to wait until later in program for some of this.

- Lack of practice in computation (multiplication and division); find continuity of program more difficult to follow at 4th grade level than 2nd grade level; depends greatly on board work by teachers (some lessons could have part of lesson on ditto - this would save time since I have limited board space; some lessons too difficult for students.

- Need more traditional algorithms - a slight more emphasis on computation using traditional method.

- Not enough practice - "drill"

- It is not a complete program within itself. It must, in my opinion be supplemented from time to time, as needed, with traditional materials. However, the main and very important ingredient is the teachers.

- Checking and grading; some lessons are too long and the attention of the class is hard to keep. Some days I don't feel like teaching the whole class, and I miss the good old days of giving the class an independent assignment or teaching a small group.

- The amount of supplementing needed.

- Not enough computation; no grading procedure or easily scored tests. We must give grades and each teacher establishes his/her own haphazard method.

- Allowances for learning facts; resource available to teacher for slower children is needed.

Fourth Grade (con't)

- Not enough stress on, e.g., number facts that are presumed to be lost.

- Not enough (not any) follow-up/supplemental or remediation work. It seems as if not enough work time is given to thoroughly develop certain concepts especially the ÷ algorithm and fractions.

- Students do not know facts, nor can they apply math to practical areas.

- My low students have not progressed with CSMP and haven't found a strong area in it, except for simple arrow pictures, which is such a small part of the progam. I don't feel it gives them the necessary basic computational skills.

- Trying to gear activities so that most of them were practical for all students. The 1-4 star idea is good in theory but all but impossible to keep going in the alloted time. In essence, it is like trying to teach 1½ or 2 math classes and touch all areas.

- I don't believe the children have the opportunity to really learn and master the basic skills.

- No tests; I think a short, easy to grade test would be nice.

- No provision for math-talented student to move ahead (except for *** and **** lessons). We have some who could be doing more advanced work.

  No testing tools (check for teacher's benefit).

- The amount of planning time and the worksheets and workbooks to correct. Especially those that state "many answers possible" - too many of those.

- For children starting out in traditional math, and who are weak in basic computational skills, they don't seem to improve much merely by doing CSMP, but seem to need some supplementary work.

- Children not receivng enough of the "old" "basics".

- Slow learner cannot grasp.

- It is very difficult to evaluate progress especially for grading purposes. Checking all the work is impossible especailly those in which many answers are possible.

- It is very difficult to begin CSMP in the fifth grade if you've never had it. Many of the lessons are too long.

- Not enough drill work on computation and no specific lessons on structure or form for computation, because when tested - they are tested by form.

  When lessons are at the board many chidlren get lost in day dreaming or talking, etc. Control seems to be difficult, not all will participate. The quick ones get it while we will wait for slower ones who may never understand.

- It is very difficult to teach CSMP to a student who has entered your class during the year. There is little time (schedule-wise) for a homeroom teacher to introduce the language and techniques of the program. I see this to be a major concern of the intermediate grades (not so much in the primary grades).

- Doesn't correlate well with what's being tested on standardized tests.

  The students have careless paper-pencil habits.

Appendix: Spiral Approach

What do you think of CSMP's spiral approach, where the teacher goes on to a new lesson in a different strand, even though not all students may have understood the last lesson?
Have you made any adaptations to the spiral approach?

In addition to the above, interviewed teachers (denoted with*) were asked:
"Have you used a spiral approach before?"

- I like the spiral approach. I use the spiral approach in reading.

- It's alright. Students who may not understand it the first time could go on to something new that may really be easy and enjoyable to them and when they go back to the other skill it may be easier for them.

- I like the spiral approach and use it with Reading as well. This is the only way minimum requirements can be met by the whole class. I think every child should be exposed to every requirement for the grade whether or not he has mastered the first.

- I think this is good - although I try to give those who don't understand extra help. Often when the concept comes again they are more ready for it.

- I have made changes. Children were frustrated, concerned about several concepts (Nick's subtraction, for example), so I took those lessons on consecutive days.

- I think if this approach has been adopted it must be logical.

- In some cases I've repeated the lessons and other times used more than the allotted time for math.

- It works well for some students but others just seem to become more confused.

- --

- --

- Good

- It's very good - a high point of the program. But a few times I've just continued a lesson if I have found the need to.

- I like the idea of the spiral approach - I think it tends to lessen some "math anxieties". I would like to see some statistics as to the results of this approach.

- CSMP concepts take too long to teach. I do not like jumping to different lessons each day. Slow students or average students frequently can't remember previous lesson in that strand.

  I do not enjoy teaching a different strand each day. Children develop the attitude that they don't have to learn something completely because the teacher doesn't care whether they fully comprehend so why should they. A BIG PROBLEM in the psychology of this method.

- I have spent more time on certain difficult lessons, however, I have kept with the lessons assigned.

- Very good - effective

- I like it. Experience instead of worrying about mastering concepts.

- Very good for the high group of learners. Others become frustrated.

- The top math students get frustrated if they don't get the lessons the first time thinking they will not spiral back.

- It is good for the better students. But lower students get very frustrated.

- Yes - I teach the subtraction algorithm to mastery.

- This is good because when lesson is repeated everyone feels good about themselves.

- I'm in favor of this approach.

- I enjoy teaching it but find it very difficult to place a letter grade on child's progress.

- Like spiral approach - although have spent 2 days at times on a strand to assure understanding.

- Sometimes it is effective, at other times I feel it's important to arrive at closure the next day.

- I'd feel more comfortable with a greater number of consecutive days in practicing skills.

- I don't like it as mastery is not achieved.

- I would prefer to continue with the same lesson before going on to a new lesson.

- I've had to adjust to that philosophy.

- Good

- I've seen it work but it still surprises me. Perhaps the 4th grade teacher gets to see even more than I when a concept we've introduced sinks in. 3rd grade seems to be a year of exposure - decimals, division, regrouping - but very little mastery.

- The spiral approach is very effective.

- I like this very much.

- Great

- Fine

- Excellent

- Like it - eases frustrations

- For the most part I like it. When I teach harder subtraction problems - $\begin{array}{r} 100 \\ -37 \\ \hline \end{array}$ I do all the Numbers Strands together for 1-2 weeks.

- I approve. You always pick up another group of students who didn't understand it the first time around.

- ?

- This is a basic approach used by teacher (when permitted by materials and organization) over the ages.

Fourth Grade

Entry classes

- Does not include the needs of all students.
- I feel children who need additional time should be given it.
- The spiral approach helps to keep the children interested in the lessons.
- It has good potential, but the results are not apparent.
- Sometimes repeat part of lesson or do together on board.
- Occasional problem but after some time gained confidence in program.

Veteran classes

a. New teachers

* - At first I was expecting mastery, so it was taking forever. Now I'm relying on the spiral more. I think it works with CSMP. With traditional math, I'd rely on mastery,
(I've used a spiral apporach before in reading)

* - I think that's alright; it's always been that way and I'm amazed at how much the kids remember.
(I think most math books kind of use a spiral approach anyway.)

* - I think it's a reality of life that you don't carry everybody at the same level. I really like the *, **, *** system
(I've used a spiral approach before; in fact I worked-up a 6th grade program using a spiral approach.

* - Basically I like it; but there are times when I question the lack of mastery on skills I feel they need by this age.
(Most of them are mastering it.)

* - I like it.
(I've used a spiral approach before - it wasn't as involved or lengthy, but generally about the same.)

- I found that too much time was spent in reviewing concepts with the students and we often could not introduce the new skill or concept and fell behind schedule.

Veteran classes

a. Experienced teachers

- I like it. I don't think they need to understand everything all the time to learn.

- It seemed strange at first and at times frustrating to some children but after the program was a few weeks old, the children became comfortable with the approach.

- I don't like to teach a different strand each day. There are many times that I would rather repeat a lesson to enable the students to understand the lesson.

- I don't like it because it does not allow for practicing a skill sufficiently in order for students to retain it over a longer period.

- At times I've had to review the concepts during a free time.

- I use the approach but the students tell me they are very frustrated with this method. I have stopped teaching CSMP and gone to traditional math when I noted large gaps in basic skills.

- Good. Some children are frustrated. Yet one explains that each time we'll try to understand it better.

* - It's O.K. I sort of agree with that because I think it does work. With some kids, though, they never get it (either with spiral or mastery approach); at least not this year.

(I don't think I really heard of a spiral apporach before the workshop.)

* - Introduce with CSMP lesson, and follow it for a day or 2 with supplementary material on that concept.

* - I like it, it took me a while to feel comfortable with it.
(Traditional math books are based on a spiral approach, but I wouldn't leave a page until most understood it.)

* - I can see the advantage to it...prefer something in between spiral and mastery. When you start something brand new, you should give it 2 days in a row. I extend a few lessons for a couple of days so that students aren't left frustrated.
(Teachers have always used a spiral approach)

* - I don't have as many problems as I did initially. Would not prefer mastery approach. The first 15 minutes, I maybe review yesterday's lesson, then go on to today's lesson. I like the way the schedule spends a different day each week for the different strands.

* - I think it's a workable idea based on past results. If you try to teach for mastery at every step you run into problems too.
(I've used a spiral approach before in other areas.)

* - I like that (spiral approach). And I tell the kids not to worry, because they'll get it eventually.
(I never used a spiral approach before CSMP.)

* - Difficult for teachers to keep switching all the time; they need additional teaching when we come back to it. I didn't feel this way in 2nd grade program. This year I stayed on the same topic 2-3 days in a row when I felt it was necessary.

* - Becoming a believer; I was very leery the first time. But I'm pleased now. (Somewhat, but I always hit for mastery. If students get frustrated, I tell them not to worry)

* - I still think that's one of the best parts about it. (I never used a spiral approach before CSMP.)

* - I'm comfortable with it, and I wasn't sure I would be. If I really bomb a lesson, I go over it the next day. But it doesn't bother me, and I kind of like the variety myself.

- I'd like to see mastery, or something close to mastery before moving along.

- Good approach!

- I don't like it. They swore they had never had something before. I looked it up, and I had notes that I taught it. Personally, I'm bothered. They need review quickly. What I see (and I have evidence of this) is: "I didn't get it then and I'm not going to get it now. Now some of them can, but I have an obligation to everyone of them. There's so much backtracking. I feel when we leave something they have difficulty with, that they're tickled to death to leave it so that they can forget about it. Out of sight, out of mind.

  I haven't changed the schedule, even though I disagree. I follow it almost religiously. Right now I'm not convinced that they do see it; I'll have to see it for another couple of years before I'll see. (Never used spiral before; (used sequential approach).

- It's kind of scary your first time doing it. I really don't know - I'd want to wait a few years to get the experience and form my own opinion.

- That didn't bother me - most of my class is quite bright.

- I don't really see that there's any significant problem (I've used it in other math programs) except for the fact that there isn't enough work in basic operations.

- I think it works well; they seem to pick more and more up each time. We also have a resource teacher who picks up new students and those having problems.

- Ours works O.K., because we have an intermediate resource teacher who takes the children identified as having math disabilities, or children new to our school (and CSMP) and instructs them on a small group basis.

- I would prefer not so much jumping around.

- At times, I've stayed longer, when there seemed to be some real frustrations or a strong need. But, generally speaking, for much of it, the spiral approach is O.K.

- Negative

- I don't know. I feel that I lose so many students by the next week. Would like to spend 2 days in a row before leaving it.

- I think it's good. I do adjust it just a little bit occasionally.

- It's alright; the students don't seem to forget.

- For the good students it's fine. For poor students, they'll never get it. You have to reinforce it while they're there, because if you don't and you come back to it a week later, they don't even remember what you had the first time - you have to start all over again.

- A good approach

Appendix: CSMP and Low Ability Students

How is CSMP working with your low ability students?

(Are they better off in CSMP or in a more traditional program? Why?)

- For low ability pupils almost any concrete, manipulative program works. They have positive responses for manipulatives. Pencil and paper activities are about the same.

- Not very well. In addition to CSMP the low ability students need a lot more traditional work because they were already exposed to a traditional program and they feel a little more secure.

- I think they fare equally. CSMP gives more motivation, but lacks the drill they require. Traditional program gives the drill which enables some of them to master facts which is important but many dislike it and are not motivated to use the facts properly.

- I think it is more interesting for them and they have a chance to succeed more often than in traditional programs. They have a better understanding of concepts. They do need more computation practice than that provided by CSMP.

- Unsatisfactorily. (Better off with) traditional. Other years I have had groups - could spend more time with less able children - using manipulatives, games, etc. This year I must devote so much time to total group instruction that I feel the less able students are "short-changed".

- Most pupils have adjusted mainly because they want to keep up with the other pupils.

- I feel able in a more traditional program to concentrate on mastery. They did however enjoy and were able to actively participate in some of the lessons of CSMP.

- They have a harder time, especially with application.

- Notice no difference

- More motivated by storybooks, etc. Minicomputer really great! *Worksheets excellent daily assessment.

- I don't feel it helps them as much as it does the brighter ones. Especially if its one or two while everyone else has their hands up. It's hard also with new students.

- Since they cannot do simple addition, subtraction or multiplication in their heads, they have difficulty with the CEMREL methods.

- CSMP with reinforcement practice in basic addition and subtraction facts.

- I feel they need a more traditional program.

- Low ability students have been removed from the program and taught traditional math by special service teachers. Concepts are not shown concretely enough for people who need one-to-one teaching.

- No better - when they don't grasp the first few times they close their minds and quit trying. They get the idea it doesn't matter if they do or don't and they don't have to finish.

- The low ability students do not work well in a large group program. They need more individualized work which I find difficult to do with CSMP. A more traditional program with more concrete lessons would be better for those children! When teacher directed lessons with some individual work mixed in is done, the low ability students are unable to do the seat work because they have not understood or followed the lesson.

- Poor

- Don't have any.

- Their interest is higher - achievement would probably be poor in either program.

- Poorly

- Peer teaching is very helpful with my low ability students.

- Not too well. They need more individual help with basics. I think a more traditional small group program would bring their level up.

- Often lost in new lessons and frustrated. Seem to pick up a little better 2nd time around.

- I'd say the lower ability students seem to benefit the most. If they don't know their multiplication tables or how to borrow, they can still work problems on the minicomputer. They also benefit from the non-verbal (written) format, since most are also poor readers.

- Low ability students need constant repetition no matter what program they are in!

- Better - in more traditional - need more drill.

- Well

- Traditional seems better for Learning Disability because of the long attention span required with CSMP.

- Better - highly motivated; mini-computer excellent for low-ability students; individualized worksheets present excellent daily assessment.

- Better off in CSMP - less repetitious and boring but they do need extra attention plus some drill work.

- I'm not sure. Along with the mental computation, I feel they need more paper and pencil reinforcement than the program provides in certain areas (algorithms).

- These students are not in the CSMP group. An aide teaches them traditional math.

- Not working. They need basic drill badly.

- They become frustrated!

- They need to learn their number combinations. So traditional is best.

- They feel they are also capable.

- I am undecided definitely but low ability students in my class usually do better in traditional math.

Entry classes

- Not well. Traditional. These children need repetition.
- They are better off in the traditional program.
- Very well
- The low ability students need a more traditional program because they need to move at a slower pace.
- Depends on the student and his attention span. About 1/2 are doing well and very enthusiastic, the other 1/2 are unable to do much of the CSMP work.
- Not good for some low ability. They need a one-to-one approach. Some may need a more traditional approach (partly or half and half).
- No difference.

Veteran classes

a. New teachers

- I have one girl whose completely lost; but her attendance is so bad she'd be lost in any program. I really like the 1, 2 and 3 star system.
- Fine, they find success sometimes, and it's fun for them.
(Slower students some times do better in the mental parts that CSMP has, rather than a more traditional program - 50-50 chance with either program.)
- They're tuning me out because it's going over their head. My bright ones get so bored while I'm trying to explain things to slow ones.
(Yes; more drill. They don't need probability and geometry so much (or at all at 4th grade).)
- One girl is out of it most of the time - she can't handle it. And I have another low girl whose doing pretty well.
(The one girl is working in a traditional program and having more success. She goes to a special teacher. She can't tell where an arrow starts or ends. The other student is doing well with CSMP.)
- I am concerned about a couple who are very quiet. They get lost and dream during class discussion. They let the more aggressive ones take over.
- They enjoy both.

Veteran Classes

b. Experienced teachers

- I don't think it works well with them. I know they say it does, but I don't find it does at all.
(Yes, traditional - I just don't think there's enough practice for them in CSMP.

- If they have a logica[illegible]nd, they can transfer; if not - they can't. I only have one low student who [illegible]od at CSMP.

- 2 or 3 don't seem to be listening at all - attention span
(They'd probably be the same in any program. They don't remember.)

- They're frustrated, but they'd be frustrated with anything.
(Not most, but one would be better off because he can learn by rote, and then he would feel some success. On the otherhand; one otherwise slow student did very well in CSMP.

- It's not. They seem to enjoy certain lessons and don't mind coming to math, but they have trouble with basic things. Decimals and geometry give them problems as does understanding the functions of the arrows.

- Another teacher taught low ability students.

- It was arranged so that I didn't really get any low students. 3 girls go to the remedial teacher. They are slower to understand, but they get it eventually.

- We group for math, because we've found that the lower ability kids just can't handle it. (Lower kids go to traditional math class.
(Their level of thinking can't reach the height that is expected of them in CEMREL. It's challenging for better students, which is good.)

- No really low students, but 2 or 3 who are low average. They like CSMP, though.
(It's easy to work with a couple of low students out of only 16 students. Next year we'll have 30 students (many from other schools).)

- So much is too abstract for one of my students. He's successful with some parts, but I give him a signal for him to work on his own material when CSMP is too much for him.
(Maybe; although there are parts he can do with CSMP. He wouldn't get as frustrated with tradtional math.)

- Not terrific, but I don't feel any program would, I think CSMP's as good as any program for them, and in a way it's better because of the geometry lessons.
(No)

- Working as well as they can. Do need to be helped always. So easy material is placed in her folder.

- I feel that they are better off in a traditional program because they lack the basic skills to do well in CSMP!

- Low ability students do poorly - but then they do poorly in any math program.

- I think that they are better off. They would be swamped in any program. Their self concept remains high.

- My students probably would be better in traditional math since they have such poor computation skills and knowledge of basic skills.

- They understand more and feel better about themselves. Better off in CSMP.

- We have chosen to put our lowest functioning children in a traditional program but our next to the lowest group is doing well in the CSMP program because they have some concept of the relation of numbers.

Fifth Grade

- Low-ability students are better off with drill type math lessons as they tend to be more structured.

- They are performing work originally they would not have tried. They are achieving some good measure of success - they like the challenge.

- Maybe I just feel inadequate because this is my first year; but I'd like to feel that I'm doing more for her.

(Maybe that's the way one of the slow students learns; by rote (not that she understands it). Maybe she'd be able to handle it next year. . .? Maybe it's a little too mature for her.)

- Not good - it's really neat for the high ability ones. Then again, maybe they would do poorly in any program.

(I don't know - I've wondered that all year long.

- Not well.

(They need concrete things. Should be 75% traditional and 25% CSMP.)

- It's too difficult for the slow student.

(Yes - they're the ones who need constant repetition in any area in order to be trained.

- They work very well and achieve something each day by doing the "one stars". They don't feel as inferior as in an old program.

- Better off - more understanding - don't feel as inferior as in traditional program (with chapter tests). Can do something each day.

- The easy pages in CSMP are fine but when they get progressively more difficult it is hard to get them to even try. In traditional - easier problems can be given for more drill and low ability students need the repetition.

- All of my students this year had started out in traditional math, and for some (especailly 5th graders new to our school) there was resentment against a change.

- (Better off) in tradtional

- Not well; but I know it wasn't the program, I know it wasn't me. I know it was the particular group of kids. Some would get hysterical; others just tuned me out. Some had behavior problems.

(Yes - there's no reading or reasoning; it's just rote and they do better with that. I know they're not learning to think mathematically, but they can at least do something. Two students get so frustrated with CEMREL, I gave them other work to do; also lessons are so long, they lost attention.

- I lost them. They have a short attention span. The minute I turn around to draw an arrow picture, I've lost them and they're day dreaming. And they are the ones who aren't transferring things they've learned.

  (I really feel that both programs offer a lot. I feel they need drill work. There's something to be said for memorizing things, and there's also something to be said for knowing why it works.)

- Very difficult for average-ability transfer student. (We're going to get a lot of transfer students next year, so this could be a problem. The slow students are usually able to get something out of each lesson.

- They're not doing well. During introductory lessons, with all the discussion they just sit and wait for someone to give the answer. I get so mad, they just <u>sit</u> there. Then they can't do the worksheets when they come to them.

- (They'd probably have trouble anywhere; I don't know whether or not they'd be better off in a traditional program.

- Not well.

  (Yes - mainly just repetition.)

- Better off in CSMP because they can be behind and still like math. There is nothing to like if you're poor in a traditional program.

Appendix: Low Ability Student Discrepancy

Some teachers have indicated that CSMP may be less appropriate for low ability students than a traditional program. However, test data seems to indicate that they do about as well as low ability non-CSMP students do. How do you account for this discrepancy?

(For those teachers who were interviewed, and who had indicated that CSMP was <u>not</u> working for low ability students):

Many teachers have said lots of things you've said. And yet the test data we've collected over the past few years seems to indicate that low ability CSMP students generally do as well as or better than low ability non-CSMP students. How do you account for this discrepancy?

- This may be because teachers know students have to know the basic operations (+, -, ÷, x) and they try to provide for this need.

- If they are exposed to the program in kindergarten maybe they were not as confused as those who had been taught in the traditional program.

- Many teachers who use CSMP might also be using a phase of a traditional program (traditional workbook). After all, our children are tested on traditional skills and we do have local and state minimum requirements. I felt bound to teach skills in the manner in which I knew they would be tested in addition to the CSMP program. This is why I spent an additional 15 minutes daily on Math.

- Don't know - I feel that it is appropriate.

- I think CEMREL's scope and sequence is slower paced than many districts' (including ours.) Since teachers must try to meet district goals, CSMP is supplemented. Tests reflect children's progress in relation to CSMP expectations, which would indicate satisfactory achievement for test data (CSMP) but not necessarily district standardized testing program.

- I really can not answer this, since I have not actually seen this comparison.

- The teachers have probably given the pupils extended Math periods to master basic facts.

- The tests show the end results which will be low and the tests are probably written more like a traditional method.

- Children and skills differ.

- Teachers feel more secure in the assessment of the traditional program.

- Some of my low reading students perform well in CSMP. In a traditional program they would probably have to read more. CSMP is designed as a lot of teacher-taught. Other programs have more independent work. It's some of the brighter ones in reading that have trouble in CSMP - they feel they should understand easily - when they don't, they feel frustrated.

- Low ability students are difficult to reach no matter what the math program is.

- I would be interested in seeing results of such tests. I have found <u>in most cases</u>, that the low achievers are frustrated, confused, and do not receive sufficient repetition in the areas most helpful to them.

- Beats me. What do you mean by "about as well?"

- One year when I had the low group they had difficulty with logic - deductive thinking and certain concepts - needed more experience with concrete things. Were not familiar with how many 21 is, etc.

- More interesting - less pressure to learn basic concepts.

- I don't know.

- I cannot account for this discrepancy.

- Maybe a more individualized approach would be best. We can't just forget about low level children whether they're CSMP or Non-CSMP.

- Perhaps the supplementing of the program keeps them up there with the others.

- I think because of the wide offering of *, **, *** materials, perhaps when the slower students just get work finished on the * we feel they aren't doing as well. However, the concepts are usually developed in the *, and as their computational ability increases, it should catch up to concept skill . . . e.g. after they learn their multiplication tables, + and - facts, etc. At least CSMP students can work problems on the minicomputer even before mastering facts.

- CSMP gives the low-ability student something more tangible to work with.

- Teachers may have seen the need and provided supplemental work.

- Teachers feel more "secure" if children are constantly performing computation. Easier to assess "traditional" teaching. CSMP teacher can see comprehension approach more adequately, after 1 year's experience.

- "Some teachers" are old fuddy-duddies - afraid of anything new. Also, daily progress in CSMP is difficult to measure - many students learn by osmosis without the teacher realizing it.

- I really don't know. It has been over 4 years since I worked with a traditional program and I have no basis for comparison.

- It appears that there are some students who have trouble with math by any method. The two students that I have in traditional math are there because there is a lot of practice. These two can retain a thought for one second - where as they can do a page of problems if they are all alike, - not much - but more than getting nothing out of CEMREL and disturbing the others.

- Multiple choice questions and basic drill.

- Basic number combinations have been stressed and allowed the children to get further on the Achievement tests. The farther the child gets on a timed test a better score is made.

- Basic number combinations have usually been stressed and allow child to go father on a score.

- Children enjoy the CSMP approach and want to achieve - takes a lot of teacher time.

- Testing in my room does not show this to be true but if it is, I cannot account for the discrepancy.

- I supplement mine with traditional math.

- The same as stated above (When they don't grasp the first few times tney close their minds and quit trying. They get the idea it doesn't matter if they do or don't and they don't have to finish.)

  They respond the same way to both methods unless it is more individualized and they get help in understanding step by step and are able to manually manipulate many repetitions with objects and numbers in combinations.

Entry classes

- I can't.

- I feel the CSMP teaching approach to help or be of great value to low ability students.

- Low interest level, short attention span, and large groups.

- The discrepancy is probably due to their increased interest in the new Math program. But many children cannot sit and work for these periods of time. These children probably fall back, while some who had a good interest in the first place may progress well.

- I am not a great believer in test results. On daily math assignments in traditional approach low ability sometimes don't understand or see connection between CSMP methods and traditional problem solving or computation.

Veteran Classes

a. New teachers

- It's very difficult to measure what children are really learning. The slow students don't fit the norm, so teachers assume they're not learning; when actually they are learning in their own way (which is not measureable; you can't compare slow students with others).

- They must be doing something that I'm not seeing. Maybe they get more than we realize.

- CSMP teaches kids to think. Standardized tests do not measure logic - they measure if kids have learned to solve the problem in a set way.

Veteran classes

b. Experienced teachers

- The method is interesting and a novelty for them. Each lesson builds to another.

- Because low ability students do poorly no matter what math series they are in.

- Again self concept is high - the child will try and feel success at one level of performance.

Fourth grade
Veteran classes, experienced teachers (con't)

- I found that low ability children did well on problem solving but much poorer in computation. I feel some remedial program is needed to help CSMP student who cannot do well on computation since he does not know his number facts.

- I don't agree with them. My low students feel they belong.

- The low ability students are not just getting CSMP; they're getting traditional math too. That probably has a lot to do with the results.

- How many teachers are doing what I am? I teach some of both. I spend a lot of time on CSMP, but I also spend a lot of time on the other work. I don't know if I'm playing quite fairly for a pilot program but we have to meet the objectives the school gave us.

- Our very low CSMP students are not tested at 4th grade. In class they don't function.

- I really don't know - they seem confused with CSMP; maybe they're getting it eventually, but they look and feel confused. Still think traditional program might be better for them - they wouldn't feel as confused.

- I don't know - I think CSMP teaches chidlren to think. Maybe he's learning the "why" instead of just the rote.

- I find low-ability students in a traditional class turn math off - in the CSMP they are trying and learning because of the interest.

- That's amazing! Well, I do a lot of multiplication games. And on occasion when there's free-time, we do addition work.

- Maybe we just think it's not working and it really is.

- They may test just as well, but on a daily basis, the kids aren't feeling successful. They can't work independently; you really have to lead them.

- The kids you're dealing with is the problem, and not the program alone. The kids aren't getting the help they need.

- The way the groups are broken-down isn't quite fair. The slowest CSMP kids aren't tested; or 2 years ago, some kids who had just transferred from a traditional math program were tested.

- The pictures: arrows and pictures usually turn on even the low ability students, therefore they learn well.

- Good teaching!

- It takes more time and much individualized attention to get the CSMP lessons across to low-ability students. They need constant help. In traditional math you can scale down lessons but you can't do this in CSMP.

- Low ability students seem to move ahead faster in basic computation with traditional methods, perhaps. But I believe, and am eager to see if, children who start with CSMP will make more progress in the long run.

- I don't really know now.

- Maybe the kids are understanding more than we think they are. You just go by their daily performance. They seem to be turning it off. Maybe they're getting it by osmosis, day after day. I'm surprised to hear that (the results).

- Maybe it's the teacher's problem. I, as a teacher, don't get that feeling of success with the low students in CEMREL.

- I think they would have problems in any program they were in; I don't know.

- I'll argue that point, because the slow 4th graders were not tested.

- They are getting alot of concepts in CSMP, not just rote learning.